

Pfau, Ricardo.

New, rare, and beautiful orchids of Costa Rica.
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To my old and new Friends and Patrons of the Old and New World.

With the present year's edition of my price list of new, rare, and beautiful Central American Orchids I have the pleasure to present you this illustrated paper on the "Orchid Flora of Costa Rica." Its purpose is to serve as a general answer to the questions which I am continually receiving about the *modus vivendi* of the different sorts of Orchids of this part of the world.

For the better understanding of the following specific treatments, some explanations and notions of general nature may precede the descriptive list.



The Climate of Costa Rica

(and of Central America in general.)

Little Costa Rica, seen from board ship either from the Atlantic or Pacific coast, has the aspect of an immense dark-blue wall, torn into many more or less longitudinal pieces, whose crests have an undulating, but generally soft outline—quite different from the wild character of the Swiss Alps—and are surmounted here and there by peaks, most of them being volcanoes, although they do not look so in the least.

A half-day's trip by steamer gives us farther evidence that that high wall is cut down nearly to the level of the sea on both its northwestern and southeastern extremities. In fact, that narrow, island-like mountain-mass extends between the depressions formed by the Lake of Nicaragua and the Isthmus of Panama; it includes the Central American Republic of Costa Rica, and the Colombian Department of Panama; and in the "blue" forests of that gigantic

Cordillera, on its high crests and peaks, slopes, and dark deep valleys, as well as on the sunny savannas and river-banks of its coast, are to be found all the orchids described below.

Such a wet-looking situation between the two largest oceans would at first suggest the idea of excessive rainfall, continuous inundations, fevers, maladies, and horrors of all kinds. However, the infinite Love and Wisdom who rules the world made out of that corner of earth one of the most pleasant places for men to live in, modifying an otherwise unbearable climate by the same simple means to which the temperate zones owe the beneficial alternation of summer and winter.

Costa Rica (as well as the other Central American States) is divided into two distinct climatic zones, one facing the Carribean Sea, with a moderate rainfall during the whole year; the other, including the territory of the Pacific waters, has six months of nearly complete dryness, corresponding with the northern winter, from November to April, alternating with six months of rains. But even the rainy season is very pleasant, as almost every morning one enjoys delicious weather, with refreshing breezes, under a bright sunshine. Toward noon the increasing heat becomes moderated by accumulating clouds; and, between 2 and 4 o'clock, generally, a heavy thunderstorm cleanses the atmosphere, and the nights are at most times clear again and truly delightful.

The dry season of the Pacific slope is due to the trade-winds, under whose domination that section comes, when they are following the sun south. The trade winds are always saturated with the vapors of the sea, which, when striking against the high Cordillera, condense into rain, and, after depositing here all its moisture, the air-current precipitates down and over the Pacific plains in the form of a violent dry storm; which, indeed, during the "verano," or dry season, is a daily occurrence on the Pacific slope. Now add to that, that during verano the trees partially lose their foliage, and you will find that most of the Epiphytes of the Pacific zone at that time of the year have to endure nearly the full light and strength of the tropical sun, as well as the violence of the dry and drying-up northeast storm, while their companions of the northern slope have less extremes to withstand.

From the above it follows that Orchids from the Pacific side of Central America need during winter a very pronounced rest; while during the summer, or vegetating time, all without exception require a liberal supply of water, and a moist air, continually renewed by a thorough ventilation.

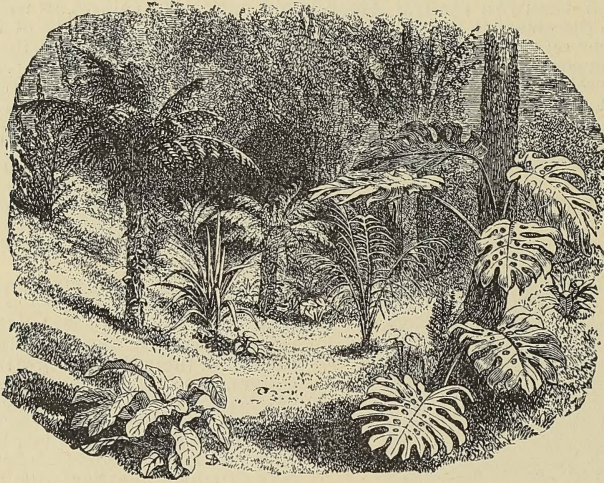
The temperature, depending on the altitude above sea-level, will be indicated with each species. The few sorts from the hot plains of the coast may require the East-Indian house or its cooler end; mountain-plants of about 3000

feet do best in the so-called cattleya house; and Alpine sorts, from about 6000 feet, will prefer the cool or odontoglossum house.

Most of Orchids, principally those with hard pseudo-bulbs, as *Cattleyas*, *Laelias*, most *Epidendrums*, *Oncidiums*, etc., generally delight and flower much more easily if grown in an abundance of light, protecting them only from the direct rays of sun.

Yet a word about a certain item which I consider of importance. I find that the different manuals on orchid culture are advocating the use of water of the same temperature as the house. In view of that general practice, I wish to state the undeniable fact that, on the tropic-

al highlands, where most of the orchids are concentrated, rain-showers are ordinarily about 5 to 10 degrees colder than the temperature of the air, slight hail being no rare occurrence at the altitude of 4000 feet and more. And a second fact is, that connoisseurs, judging from the color and consistency of the roots, are quickly aware how the Epiphytes seek for such refreshments. I am far from pretending to show such authors, practical cultivators, and keen observers as are the Veitchs, the Williams, the Lindens, etc., how to grow orchids; but sometimes one plan has proved to be good, while another may be still better; and just in that special point I wish to say: *Try and see.*



Particularities in Collecting Orchids.

Not a few of my correspondents seem to believe that I keep in stock the orchids which I am offering. Now, as I said in my article on "The Fertilization of Orchids in the Tropics," in *Orchid Review*, October, 1894, I have special and extensive accommodations in my nursery at San José for growing Orchids, and am cultivating for home trade and the cut flower larger quantities of certain easily grown species. I say *certain* sorts, as indeed comparatively few Orchids can be grown to perfection in the tropics, while the great majority is entirely averse to any artificial treatment, spend on them as much care as you can. More than that, my experience of twenty years in that line has long ago convinced me that even the Orchids which in appearance do perfectly well under cultivation will never stand transferring as safely as do plants collected fresh from the tree; and in accordance with that incontestable fact it is my invariable rule never to cultivate Orchids for exportation, but to collect, every dry season, the sorts which have been ordered. In April and May the different orders are generally ready for shipping, consisting of plants which are well ripened by several months of dryness, and therefore specially fit for the journey, so they will arrive north in full spring, ready to break out into sound and vigorous growth.

Now don't forget that the Orchids of my list are scattered over an area about 600 miles long by an average width of 100 miles. Bear further in mind, that that territory is inhabited in only

a comparatively few places; that, therefore, most of its surface is not only very mountainous, but covered with dense, nearly impenetrable virgin forests, swamps, and jungles—a dreadful wilderness inhabited only by wild beasts, snakes of every description, and principally with the most fearful enemy of man—the invisible microbes of fever and other diseases—a fearful solitude crossed by innumerable rapid torrents or deep rivers without bridges, and traversed by no other means of communication than Indian paths, which generally are very narrow, and sometimes nearly invisible, and which it requires a special keen experience to distinguish from the much more numerous paths made by the jaguar, the American lion, the tapir, and other big carnivorous beasts; and, losing his way amid that immense dark labyrinth means a slow but inevitable, horrible death by the starvation of the unfortunate traveler!

My friends will now fully understand that it will not do to go to a place perhaps hundreds of miles off, confronting all the mentioned difficulties and dangers, only to collect and bring back a few plants of a certain sort that has been ordered—the trouble, expenses, and risks being the same for collecting a thousand or only one plant of a given sort. In stipulating my prices I took as much as possible the London auction prices as a basis; and all sorts which are from localities of easy access, I offer rather cheaper than if they come under the hammer;

but for species of very distant or difficult places, I of course can apply lowest prices only for largest quantities of the same kind. It happens, also, that, at one season, I may be, by some exceptional circumstance, unable to fur-

nish certain sorts. In such cases I shall, at the time of shipping, refund the balance unless I am expressly authorized by the purchaser to substitute failing sorts by similar ones of approximately the same value.



Packing and Shipping.

In former years I tried all the different ways of packing; and my very long experience led me to decide that the essential point of safety lies less in the method of packing, but rather more in the collecting at the right time, in the careful preparing of the plants previous to the packing, and, above all, on the place which the plants get on board steamer. This last very important item is under my control only with the steamers of the Atlas Co. and of the Sociedad Bananera de Matina, whose steamers start weekly from Port Limon direct to New York. Unless I am otherwise instructed I invariably pack in the following manner, which I know to be both the safest and most economical one.

Layers of dry shavings and plants alternating, held down at convenient distances with stakes of bamboo nailed to the sides of the case. Taking cases of pine or other porous lumber dispenses with making holes in the case—a practice much in use in former times, but which has several serious inconveniences.

This is such a simple and cheap way of packing that purchasers perhaps sometimes believe that I do it with a view of saving time and material. However, I do it simply because I know it to be the best method; and if any of my customers desire me to pack in a different way, I shall cheerfully do so, without charging extra, unless I am expected to use some costly mate-

rial, which I then would charge at its cost.

For rapid shipping to all ports of the world, our Atlantic harbor, Port Limon, presents today a maritime activity which is truly surprising, considering that Costa Rica contains scarcely 250,000 inhabitants! Rapid mail steamers leave weekly, twice for New York and once for New Orleans; monthly, twice for Southampton and once a steamer each for Germany, France, Spain, and Italy. Port Limon being in communication by rail with the capital, San José, plants can be packed the day previous to shipping, and never run the risk of lying for days in the hot port.

It is a known fact that the main risk of the journey consists in the transit through the tropical zone, the plants being practically safe as soon as they reach the temperate altitudes. My American friends have the benefit of that circumstance, especially as the steamers going from Limon to New York do not stop anywhere. For some time I made some shipments to Europe via New York with good success, the consignments arriving more than a week earlier than they could by the direct line. European shipments, however, I will always forward by the respective direct English, German, French, Spanish, or Italian steamer, unless the buyer expressly wishes the plants to be sent via New York.

List of New, Rare, and Beautiful Orchids of
Costa Rica and Panama.



Acineta.

A. densa, Ldl.—Intermediate, growing on horizontal branches of trees or on rocks, always exposed to the light, scarcely protected from the direct rays of the sun.

A. species.—Another beautiful species with creamy-white flowers, that has come to my notice. As yet its exact habitat is not known to me.

Anguloa.

One species, which is near *A. Ruckeri*, came some time ago to my notice. Its locality is not known to me, and I mention it only as being probably the only representative of that genus in Costa Rica.

Arpophyllum.

A. spicatum?—Found in a very distant place. Although on that spot it is found in considerable quantities, I could furnish it only occasionally.

Aspasia.

A. epidendroides, Rchb., fl.—An *Odontoglossum*-like plant with rather dull colors, spread all along the Pacific coast from Panama to Nicaragua, where it grows in certain localities very plentifully on shorter trees, receiving mostly a great amount of light.

Barkeria.

B. elegans.—Certainly one of the best Orchids for florists' use. Its comparatively large flowers, of a bright pink, with purple and yellow lip, are of good substance, and very lasting when cut; and are borne on stiff spikes from 5 to 15 in number. The plants, although always very small, throw out often two and three spikes; and, occupying very little room, quite a number of them could be grown together in shallow boxes. They also grow well on cork; and a small rockery of cork, planted with *B. elegans* and small ferns, would give an incomparable object for an exhibition. Give it the fullest amount of light, complete rest in

winter after it loses its leaves, and abundant watering in spring and summer. Intermediate.

B. Lindleyana, and its variety *Centeræ*, grows in a distant part. As yet I am unable to furnish it at a reasonable price, except perhaps occasionally.

Batemanina.

B. Burti Wallisi, the true large flowering form illustrated on p. 185 of Williams' *Orchid Album*. It is probably the most beautiful object of the whole *Zygopetalum* section. Although from the coast, it grows and flowers perfectly well in the temperate climate of San José. The plant grows best in perfect shade; but to get it flowering, a judicious amount of light must be given. When fastened here on the bark of trees it quickly begins to climb up the tree; but every piece of stem with its turf of leaves planted in a pot with the ordinary compost given to half-terrestrial sorts, grows and flowers regularly. It is rare.

Bletia.

Several species are found in Costa Rica, but are very little called for.

Brassavola.

B. acaulis, Ldl.—This species was, a few years ago, yet plentiful in certain localities; but owing to the rapid extension of cultures in the last few years, it has become so rare that I could not furnish it at the low prices *Brassavolas* are generally quoted at. Cool—intermediate; does very well on cork with only a little moss. In summer give plenty of watering.

B. lineata, Hooker. — Very near *Acaulis*, but of somewhat smaller dimensions. Same culture, but hot.

B. venosa, Lindley.—Distinct from *Lineata*, only by some features without importance from an horticultural view. Culture same as *Lineata*.

Brassia.

B. brachiata, Ldl. — This is a beautiful large flowering kind, very near the *Lawrenciana longissimi*, but identified by Dr. Kränzlin as being above species. It is one of those highly capricious products of tropical vegetation, and never fails to make a most striking impression on the traveler. When riding through the small woods bordering the savannas he unexpectedly finds himself surrounded by a strange hobgoblin-like apparition of innumerable yellow and brown spotted pygmies dancing in the air around his head, throwing out their arms and legs in a most funny, clown-like fashion, and which, if he is no botanist or gardener, takes him time to identify as being simply flowers of an "air-plant." Culture: Intermediate, light shade, perfect ventilation, as it always grows exposed to all winds. During winter it needs a perfect rest.

B. Giroudiana, Rchb.—Like the above in its general appearance; flowers, however, have smaller proportions. Same culture, but somewhat warmer.

B. Lewisii, Rolfe.—New species, described in *Orchid Review*, July, 1893. Quite a dwarf kind; flowers of the general appearance of the *Brassias*, comparatively large, 6 to 15 on a spike. This sort needs more heat than the rest of the genus; and, coming from a locality where it rains more or less the whole year, should never be kept too dry. Full light is indispensable to get it well flowering.

B. Maculata, Ldl.—Is a rather stouter form of *B. Lewisii*; or, as it was discovered half a century before *B. Lewisii*, and being also more common, we more correctly may term *Lewisii* a diminutive variety of *Maculata*. Being a native of the mountains, it needs the intermediate treatment, and a pronounced rest in winter.

B. species and hybrids.—There occur from time to time rare intermediate forms suggestive of hybrids if the parent types were growing together. This fact belongs to the many other enigmas of the physiology and geographical distribution of Orchids.

Burlingtonia.

On the Atlantic coast at Siquirres there exists a nice citron-yellow *Burlingtonia*, which I discovered some years ago, and since found no more. I mention it for its geographical interest.

Catasetum.

This genus belongs to a section which is highly interesting for its morphology. I am so much the more sorry that I could not give to this section due attention, owing to the fact that most of its species are growing in the hot region; and after the first year of cultivation they refuse to flower here in the cooler region of San José. For the same reason I was not yet able to send over enough herbarium material to identify the numerous forms of that very complicated section. This section, to which belong also *Mormodes*, *Cynoches*, *Gongora*, etc., is but little sought after by horticulturists.

C. Dowiana, Batem.—There is certainly no exaggeration if we call this splendid unique kind the "Queen of Orchids." Its large size, most elegant form, richness of color, and the marvelous combination and contrast of the golden yellow and purple designs unintentionally bring to our mind the suggestion of "royal splendor."

C. Dowiana at all times has been rare; but in these latter years it has been brought down nearly to extermination. In fact, sometimes they are almost not to be had, and plants in flower sell in the streets of San José de Costa Rica at double and sometimes triple the price I offer them here. *C. Dowiana* requires a somewhat different treatment from that of the rest of the *Labiata* section, to which this kind belongs. It grows on the lower part of the slope of the Cordillera, facing the Caribbean Sea, where the rainfall is distributed more or less over the whole year. *Dowiana*, therefore, doesn't need such a pronounced season of rest as *Mossia*, *Triana*, etc. It grows either on smaller trees in thin woods, or if, in the denser forest, then always on top of the trees. Indeed, the greatest amount of light possible is a most indispensable condition in getting flowers from that species. Another very pronounced peculiarity of the "Queen of Orchids" is, that the plant, although delighting in sound moisture, is nevertheless more apt, than most of the bulbous Orchids, to rot. It requires, therefore, a perfect drainage and a constant ventilation. As it grows near the hot coast, it also wants more heat than *Mossia*, *Triana*, *Gigas*, etc.



Cattleya.

C. Bowringiana, Veitch.—Geographically it may be interesting to know that this species extends from British Honduras to Talamanca in Costa Rica. It is, however, extremely rare here, and I should be absolutely unable to offer it at its actual very low market price, it having been exported in large quantities from Belize.

C. Dowiana, Rosita.—An interesting supposed natural hybrid between *Dowiana* and *Bowringiana* or *Skinneri autumnalis*. The bulbs are mostly one-leaved, the flowers of size and form of *Dowiana*, the influence of the other parent being evident in the more or less pronounced pink, instead of yellow, of the sepals. There is, indeed, some variation in the individuals, owing, probably, to back-crossings of the original hybrid.

Cattleya Skinneri, Ldl.—A beautiful, very free-flowering sort. Here on the highlands it flowers from February to April; and at Easter time, during the "Semana Santa" (holy week), many a charming Costa Rican girl crowns her little straw hat with the long inflorescences of the "Guaria morada," whose

loads; and to-day—at least in Costa Rica—it has almost become rare. Its treatment under glass is certainly easy by following these directions: Expose them the whole winter and spring to the full rays of the sun; during winter keep absolutely dry, no matter how much the bulbs shrivel; from May forward,



CATTLEYA DOWIANA.

brilliant pink presents an admirable contrast with the delicate white complexion of those children of tropical Switzerland.

C. Skinneri, some ten years ago, was a common Orchid all over Central America; but in the last few years it has been exported by ship-

after the blossom is over, give them abundant waterings. Intermediate house.

C. Skinneri autumnalis and **Parviflora**.—Two sub-varieties, the one from the Atlantic, the other from the Pacific coast, both very much like the type, but with smaller flowers, principally

parviflora. The most important feature of the two varieties is that they are both autumn-flowering. Between themselves the distinction is rather insignificant, *Parviflora* having smaller flowers, and *Autumnalis* having the throat of the lip whitish. Culture is nearly like that of the typical form, but the same heat as *Bowringiana*.

- C. Skinneri alba.**—There are two pure-white forms, one with yellow, the other with rose-colored throat of the lip. They are no longer found in a wild state, and the richer people here love the "*Guaria blanca*" with such enthusiasm that the few private people who own plants of the same would not sell them for any price. In fact, I am almost thinking of buying a party of *C. S. alba* in England, to supply the actual demand for it in Costa Rica!

feature, covering, as it does, sometimes the fences on both sides of the road with its bright crimson spikelets. There is a more robust form that seems constant. The last time when I sent out for it, I was told that it had disappeared from most places. Grow it on the bare block, near the light, with heavy watering in summer and rest in winter.

Coryanthes.

My observations given for *Catasetum* are to be applied again.

Cycnoches.

See *Catasetum*.

Cypripedium.

- C. caudatum roseum** (or, *Selenipedium Warszewiczii*).—There is probably no other family of



CRYPTIPEDIUM CAUDATUM. (Reproduced from a photograph.)

Chysis.

- Ch. aurea.**—Grows on the higher mountains, being of the few Orchids found at the bottom of the deep valleys, where it grows alongside the water-streams, always on the white, soft bark of a certain tree, hanging head down. Cool, intermediate, good shade, best on cork. Bulbs don't stand the least shriveling.

Cœlia.

One species found here; too rare to be offered.

Comparetia.

- C. falcata.**—Although a small plant, yet it gives in certain places to the landscape a singular

plants which abounds in variation of forms to such an extent as do the Orchids; and among this capricious family, perhaps the most original member is *Cypripedium caudatum*, the long-tailed Lady-slipper. Every amateur knows it; not the smallest collection is without it. In every book on Orchids it is enthusiastically described and recommended. I therefore have nothing more to add, except the fact that the form I exclusively offer is the true *rose-colored* variety. Its culture is easy. Although growing on the top of the highest oaks, it seems to delight in the compost applied to the so-called "terrestrial" Orchids. The plants stand much shade; but to

get it well flowering, as much light should be given as can be done without changing the color of the leaves, which in healthy plants is always of a dark green, turning lighter if exposed to too much light. Cool, intermediate; needs watering all the year round, somewhat less in winter. In its native spot it is exposed daily to winds and storms from all directions, thus a constant ventilation is an essential item. Its pure epiphytical character shows that it requires a thorough drainage.

Cypripedium longifolium, Rchb. — Grows at the same altitude and near the same places as *Caudatum*, but terrestrial—that is, on rocks or on the ground, but with the roots always horizontal along the surface of the vegetable mold of the forest. Treatment according; wet, and with perfect shade.

Cyrtopodium.

C. punctatum, Ldl. — A large-growing plant, with immense bulbs of the shape of certain *Morodes*. Treatment — hot, terrestrial, with fullest available amount of light.

Epidendrum.

A. WITHOUT PSEUDO-BULBS.

E. criniferum, Rchb. — A very pretty, rather dwarf sort, but difficult to furnish, being from a very distant district.

E. eburneum. — Grows on the swamp of the Atlantic coast. This, and its rather small and dull-colored flowers, will make this sort little called for.

E. elongatum. — Same places as above, but of more epiphytical *modus vivendi*, and fine rose-colored flower-spikes.

E. Endresi, Rchb. — A lovely dwarf sort, with comparatively large, white, and lilac flowers. There are two constant varieties—var. *gracile*, plant smaller, spikes with more but smaller-sized flowers, and var. *robustum*, in all parts stouter than above. Both varieties need cool house, with shade and plenty of moisture.

E. falcatum, Ldl. — A brassavola-like plant hanging down from the trees with its fleshy, cylindrical leaves; sepals greenish yellow; tep. and lip pure white; cool, intermediate; season of rest with precaution, as it doesn't stand any shriveling.

E. ibaguense. — This species, very common in certain parts of Colombia is extremely rare here, and I mention it only for general interest.

E. Pfavii, Rolfe, in *Kew Bulletin*, 1894, p. 392, and *Orchid Review*, 1895, p. 37. — A stately plant, 4 to 6 feet high, each stem bearing numerous racemes of relatively large dark pink flowers; lip with a white disk, making a nice contrast. Discovered by me last year. Intermediate; culture half terrestrial, as with the larger sorts of *Sobralia*.

E. pseudo-epidendrum, Rchb. — Sepals and petals dark green, lip bright scarlet, producing a striking contrast. Extremely rare, and from a very distant district. Hot; otherwise, general epiphytical treatment with a good season of rest; likes complete shade.

E. radicans Pavon. — This species, like certain plants in northern countries, suggests the idea that it was created specially for our epoch of railroads, inasmuch as this sort seems to delight on the dry banks alongside the Atlantic section between San José-Cartago and Juan Viñas. Although the section from Cartago down counts only a few years of existence, its nearly freshly shoveled-up

banks are on many places covered with the climbing stems of *Epidendr. radicans*; and in the lovely dry months of December and January they present a truly striking aspect, looking then with its thousands and thousands of vermilion flowers just like an immense carpet spread out beneath the ultramarine-blue tent of the Central American summer sky, and glistening in the bright tropical sunshine.

E. stenopetalum, Hook. — A very nice species with lovely rose-colored flowers. As yet I possess only a single specimen of it, and thus for the moment can do nothing more than to state its presence in Costa Rica.

B. — WITH PSEUDO-BULBS.

Epidendrum atropurpureum, Willden; **E. macrochilum**, Hook. — One of the most beautiful species of that immense genus, at the same time a compact plant and very free-flowering. In later times it has become rarer and rarer. Culture: Hot; growing on the dwarf, thin, hard-barked chumeco-trees in the midst of the savannas, bathed (principally in the dry season) in the intense rays of a tropical sun, and exposed in the same season to the daily dry north storms, drying up the least humidity which the scorching sun may have left; and flowering, as it does, at the end of the dry season, exposed to the full sun, the trees being then destitute of leaves; and now I think I have nothing more to add about the culture it needs, as, with the above said, every gardener should know what to do.

E. atrop. album. — Same as above, but labellum creamy white; interesting for collectors. Same treatment.

E. bicornutum, Hook; **Diacrium bicornutum**, Benth. and Rolfe. — I am sorry to say that, until today, I could find of this nice species in Costa Rica nothing but inferior varieties, not worth offering. I mention it for its botanical interest.

E. brassavolæ, Rchb. — A well-known handsome kind. Intermediate-cool, shade; very wet in summer, dry in winter.

E. ciliare, L. — One of the oldest-known Orchids. The plant has quite a *Cattleya*-like appearance, and many a young collector has been deceived by it, believing in his enthusiasm of having discovered a new *Cattleya*. Rather common all over Central America. Intermediate; half shady, with a pronounced rest in winter.

E. cochleatum, L. — One of the oldest-known epiphytical Orchids, and the first to be cultivated in England. Common throughout Central America. Give the same treatment as for *E. ciliare*.

E. prismatocarpum, Rchb. — Plant the same as with *E. Brassavolæ*; flowers a little smaller, but more numerous on the spikes; a beautiful object when covered with flower-spikes. Being a native of the far-off Colombian district of Chiriqui, I can furnish it only under certain circumstances. Give the same treatment as for *E. Brassavolæ*, but hotter.

E. Stamfordianum, Batem. — The only *Epidendrum* with radical inflorescence. Hot, with a good amount of light; heavy watering when growing; completely dry in winter.

Fregea.

F. amabilis, Rchb., in *Xenia Orch.* Belongs to the *Sobralia*, from which it is readily distinguished by the flat, spreading labellum. It forms nice, dwarf, compact tufts, each stem bearing a comparatively large, pinkish-pur-

ple flower. Culture thorough, wet the whole year; cold and shady.

Fregia species.—There exists another sort, flowers lighter pink, and the whole plant less robust.

Gongora.

See Catasetum.

Houlletia.

H. Landsbergi, Linden and Rehb., *Botanical Magazine*, July, 1894, t. 7362. A beautiful sort. Although discovered half a century ago, it seems to have been lost both to science and to horticulture until I found it again in 1889 and distributed it from that time onward. The flowers being very large, compared with the small, compact plant, it certainly will become a general favorite—so much the more, owing to its handsome, unique coloring, which is a yellowish red, spotted all over with a rich chocolate brown. Culture: Intermediate-cool; quite shady; to be kept more or less moist the whole year.

Lælia.

L. rubescens, Ldl. (*Lælia peduncularis*, Williams, *Orchid Album*, t. 163).—I am happy to have found in Costa Rica a representative of that

ture—"half-terrestrial" compost, considerable light, much water during period of vegetation; afterward give a season of complete rest.

Masdevallia.

M. attenuata.—Two varieties, both with small white flowers, spotted with red in the one, with a yellow throat in the other variety. Intermediate; shade; always more or less moist.

M. astuta, Rehb.—The largest species I found of *Masdevallia* in Costa Rica until now. Cool, shady, always moist.

M. Gaskelliana and **Erythrochæte**.—Here there seems to be a certain confusion, as the plants which I had named by the late Prof. Reichenbach do not accord exactly with the descriptions in Veitch's excellent *Manual*. The differences being, however, insignificant, even an occasional mistake would do practically no harm.

M. Reichenbachiana.—Much like *Astuta*, but has smaller flowers.

M. triaristella.—Occurs in some places of that country, but is never called for. The culture given for *M. astuta* can be applied also to the other species.



MILTONIA SCHROEDERIANA. (In Veitch's *Orchid Manual*.)

handsome genus, so nearly allied to *Cattleya*. My plant is a little distinct from the description in Veitch's *Manual*, and will prove, probably, a variety, even a superior one, as it seems to me. Culture: Observations the same as given for *Epid. atropurpureum*.

Lycaste.

L. aromatica.—I have only twice come across this remarkable species, which here seems to be exceedingly rare, while it is common in the republic of San Salvador.

L. candida, and its red-spotted variety *Rubra*, are often found growing together; and as, without flowers, they can not be distinguished, I always collect and ship them mixed together, as done by nature.

L. gigantea?—Very rare.

L. Schilleriana, Rehb.—Perhaps the largest of the genus; sepals of a green hue; lip pure white, contrasting nicely with the curious color of the sepals.

L., different species.

All the above *Lycastes* require the same cul-

Maxillaria.

Several sorts, horticulturally of no great value.

Miltonia.

M. Endresi, Nicholson (*Odontoglossum*, Warszewicz, Rehb.).—Best known in gardens under the latter name. A very rare plant, and one of the most beautiful of either genus, *Miltonia* or *Odontoglossum*. Culture: Cool. The soft bulbs and leaves need a constant moisture, and prefer a shady situation, although a certain amount of light is indispensable to get it in good flowering condition. A thorough, constant ventilation, and a perfect drainage, are other indispensable conditions to keep this most valuable gem in a healthy state.

M. Schroederiana, Veitch.—A beautiful and exceedingly rare plant. In Williams' *Orchid Album*, t. 382, it is wrongly illustrated under the name of "*Odontoglossum Schroederianum*," and the same mistake occurred with me in describing it and sending it out in former years as "*Odont. Schroederianum*." It is only a few months ago that I received a defi-

nite identification of the true *Odontoglossum Schroederianum* from no less an authority than Mr. Rolfe, based on herbarium material and a sketch I sent to Kew last year. With these two distinct but nevertheless similar plants, we have another addition to the many morphological enigmas in orchid history. Indeed, both plants, although placed by a too artificial classification into two different genera, are nevertheless almost identical except in size; and the funny distinction is, that the plant of *Odont. Schr.* is nearly three times as

Odontoglossum.

O. carniferum.—This species, although plentiful in its native places, is from one of those localities where my usual collectors would never go; and as, in these cases, I depend upon pure chance, I can not fix a low price on it. On certain occasions I may be able to furnish it much cheaper than quoted in the list, while at other times I may be unable to get it for any money. Intermediate; much light; dry in winter.



ONCIDIUM KRAMERIANUM COSTARICENSE. THE TRUE BUTTERFLY ORCHID.

large in all its parts, while in *Miltonia* it is the flower which is in exactly the same proportion—i. e., nearly three times as large as that of *Odonto. Schr.*; but I never sent the small-flowering form out—only the large-flowering *Miltonia Schroederiana* (although under the name of *Odontoglossum*); thus the thing was practically all right. Culture: *Miltonia Schr.* needs the same treatment as *Miltonia Endresi*, except that it likes rather more light.

Mormodes.

See *Catasetum*.

- O. Chiriquense*, Rehb.—A large-flowering form of *O. coronarium*. Needs the same treatment as *Miltonia Endresi*, with more light.
- O. cordatum*, var.—Having seen some time ago a flower of it, I can at this moment do nothing but certify to the existence of that handsome species in Costa Rica.
- O. Krameri.*—A lovely dwarf sort with lilac flowers. Lately, when the government opened a new road, it was found and shipped in larger quantities than before. Needs the general culture of the *Odontoglossums*, but with more heat, the warmer end of the intermedi-

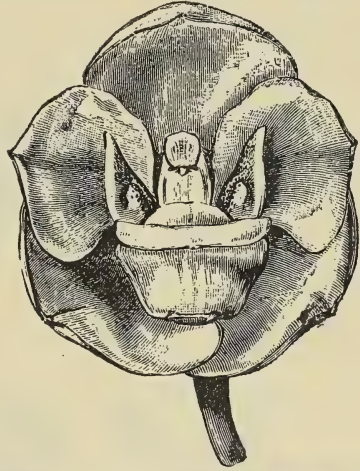
ate house suiting it best. Grows admirably on cork. There are the following varieties:

- O. *K. Chiriquense*.—The same, but flowers two months later.
- O. *K. fimbriatum*.—A curious curled form is sometimes found.
- O. *K. album*.—Flowers white.
- O. *Erstedti*, Rehb.—This charming little plant I consider to be an Alpine form of *Od. Krameri*, of which it is a diminutive. The numerous flowers are pure white with a yellow crest. Treatment, of the coldest Alpine Odonoglossum, with moisture all the year round.
- O. *Erstedti majus*.—Two or three flowers on a short spike, while in the type the flowers are always single. Same culture.
- Odonoglossum pulchelum*, Batem.—The "Lily of the Valley" Orchid. Intermediate, cool; shade, always rather moist.
- O. *pulchelum*, var. — This is a larger-flowering form, but not the var. *Majus*. Plant distinct from type; treatment, same as type, but much cooler.
- Odonoglossum Schlieperianum*, Rehb. — Belongs to the quite distinct group of the *O. grande* and *Insleayi*; and, with its large yellow flowers spotted with brown, it always presents a beautiful sight. Intermediate; shade, and not too dry during rest.
- O. *Schlieperianum citrinum*.—A pure citron-yellow form, without spots. Same treatment.
- O. *Schroederianum*. — A small-flowered form of *Miltonia Schroederiana* (which see); but the plant is much more robust.
- O. *Warszewiczii*.—See *Miltonia Endresi*.

Oncidium.

- O. *abortivum*.—A curious little thing having a many-branched spike with one perfect flower on each extremity, all other flowers being aborted into short yellow filaments. Intermediate.
- O. *altissimum*.—Hot; needs watering all the year round.
- O. *ampliatum majus*, Ldl.—The Costa Rican form is one of the best. Warm, full amount of light; entirely dry in winter, until flowering time is over.
- O. *ampliatum monstrosus*.—Thus I called a new form with monstrous bulbs, whose inflorescence I as yet have not seen, but which, according to the natives, is immense. Extremely rare. Same treatment.
- O. *ansiferum*.—A nice, little-known sort, with round flat bulbs, having a yellow margin. Yellow flower-spikes. Intermediate.
- O. *bracteatum*, Rehb.—Intermediate.
- O. *Carthaginense*, Swartz.—A handsome plant of the bulbless group with large thick leaves. In this sort the uniform yellow of most *Oncidiums* is replaced by an agreeable combination of white with crimson. Spreads from the Pacific coast up to about 3000 feet; likes plenty of light.
- O. *cebolleta*. — Common alongside the Pacific coast, where its fleshy cylindrical leaves cover the branches of smaller trees exposed to the full sun.
- O. *cheirophorum*, Rehb.—A little thing presenting a charming aspect, when plentiful and on the same tree in flower, the innumerable delicate golden-yellow flower-spikes contrasting agreeably with the brilliant dark-green tapestry formed by the compact mass of bulbs and leaves. Cold; shade; never let it get dry.
- O. "Golden Rain." — With compact spikes of pure-yellow flowers. Culture same as *Cheirophorum*.

- Oncidium Kramerianum*, Rehb., var. *Costa Ricense*.—Another marvel of creation, imitating in the most surprising manner a large butterfly on the wing. The illusion is so much the more complete as each flower is single and borne on the extremity of a large and very thin peduncle, which may very easily escape the attention of a superficial passerby, so that to him the insect seems really dancing in the air; hence its name, "Butterfly Orchid." It needs hot treatment, fullest light, and never getting too dry.
- O. *pumilum*, Ldl.—A very interesting little thing; bulbless, leaves arranged in a fan-shape fashion. Flowers comparatively large, pure golden-yellow. Hot; full light.
- O. *Warszewiczii*, Rehb.—Similar to *O. bracteatum*.



PERISTERIA ELATA. (The Holy Ghost Flower.)

Peristeria.

- P. elata*, Hook.—The dove (or Holy Ghost) plant, "el Espirito Santo," in Spanish. The flower represents the form of a dove with half-spreading wings, and is used here at religious festivities as a symbolical decoration. Grows on the Atlantic coast on rather swampy places, mostly in the full sun.

Pescatorea.

- P. cerina*.—Large, yellow, wax-like flowers. The plant is one of the few Orchids which grow in the damp and dark interior of the dense virgin forest, from 3000 to 4000 feet above the sea.

Schomburgkia.

- S. undulata* Costa Ricense.—Cattleya-like plants, throwing out a large spike with an umbrella of rather large curled flowers of chocolate color. Intermediate-hot; much light; heavy watering when growing, and a sharp rest when dormant.

Sobralia.

- S. Fenzliana*. — Large rose-colored flowers. Rather hot; much light; roots to be kept always in a moist compost.
- S. leucoxantha*.—Flowers large, pure white, with yellow throat of the lip. Same treatment as above.
- S. leucoxantha* ? *rubra*.—Same as *Leucoxantha*; throat flesh-colored.
- S. Pfavii*, Rehb. — A charming grass-like plant with rather large citron-like flowers. It is an extremely rare plant from a very restricted

locality in Chiriqui, which, as I was told by a collector whom I sent this spring expressly for that kind, is entirely transformed into corn-fields. The above note may, therefore, be considered rather as a necrolog.

Sobralia xantholeuca.—Flowers yellow. Treatment cooler than with *Fenzlana*.

S. xantholeuca purpurea.—A provisional name, as the plant is distinct from *xantholeuca*; but the flower resembles it, having, however, a purple wreath on the lip. Same treatment.

S. nova species.—Flowers as large as *Leucoxantha*; pure white, with a beautiful lilac wreath on the lip. This is the same "*Nova species*" I offered four years ago; and as I sent out a heap of them, perhaps it may be already named. If I have regularly omitted to gather herbarium material, it is, first, because the flowers are very ephemeral; and, secondly, because in these countries with everlasting springs (or, rather, summers), even the most energetic men become lazy at certain times, and principally when overworked. Same treatment.



STANHOPEA.

Stanhopea.

St. eburneum. } Culture of these sorts: Inter-
St. eornutum. } mediate; good shade, moist all
St. oculata. } the year, although heavier watering
St. Wardii. } should be given during growth.

Trichocentrum.

T. Pfavii, Rchb.—This pretty dwarf plant I discovered in 1880. In 1882 I brought it to England, and it was illustrated in *Gardener's Chronicle*. In its native place it is very free-flowering, growing in the dense forest on the branches of thinner trees, nestled in the midst of thick layers of moss, whereon it numerous white and brown flowers form like a brown-spotted snowball; 3000 feet above the sea.

Trichopilia.

T. coccinea, Ldl.—Intermediate, shady, season of rest.



TRICHOPIILIA LEPIDA.

T. coccinea marginata.—Labellum white, with dark crimson throat.

T. coccinea alba.—Entirely white, except inner part of throat, which is yellow.

T. lepida.—Natural hybrid between *Suavis* and *Coccinea*, and the most beautiful of all *Trichopilia*—lip, sepals, and petals being of a bright crimson, margined with pure white; very rare.

T. suavis, Ldl.—A beautiful plant, varying considerably in its red spottings.

T. suavis alba.—Pure white, lip with yellow throat.

For all the above *Trichopilias*, same culture as *T. coccinea*.

T. turrialba, Batem; *T. Galleotina*, A. Rich.—Plant and flower, same as *Coccinea*, except color, which is a clear citron yellow. Requires the same treatment, but more heat.

T. species.—Like a diminutive *T. suavis*. Requires hot-house, and more light than any of the other sorts.

Utricularia.

U. Endresii.—Intermediate; shade; much moisture, but with a perfect drainage.

U. Endresi Majus?—Flowers much larger; white, sometimes changing to lilac. Same culture, but cooler.

Vanilla.

There are in Costa Rica different species; but, being difficult to transport, I avoid handling them.

Warszewiczella.

W. discolor.

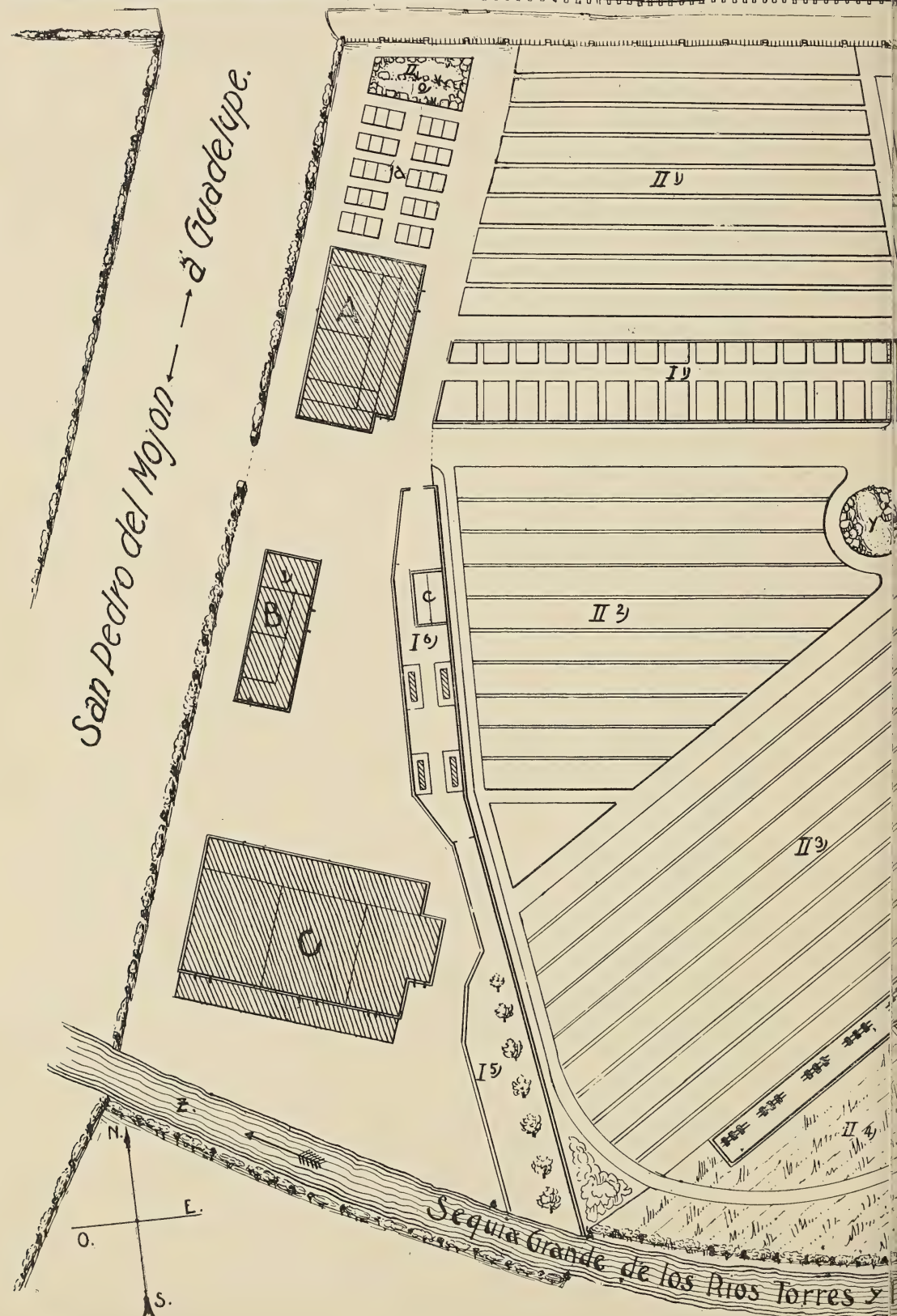
W. Wendlandi.

W. Wenlandi aromaticum; *Zygopetalum aromaticum*, Rchb., in *Xenia Orch.*—Distinct from *Wenlandi* only by being very sweet-scented, while the type has no smell.

W. species.—A nice, rather small-flowering species, resembling *W. discolor*, except in the lip, which is creamy white, with longitudinal purple strips. Culture of all the above sorts is the same. Intermediate; cool; perfect shade; roots never to get dry.

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capital
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de la
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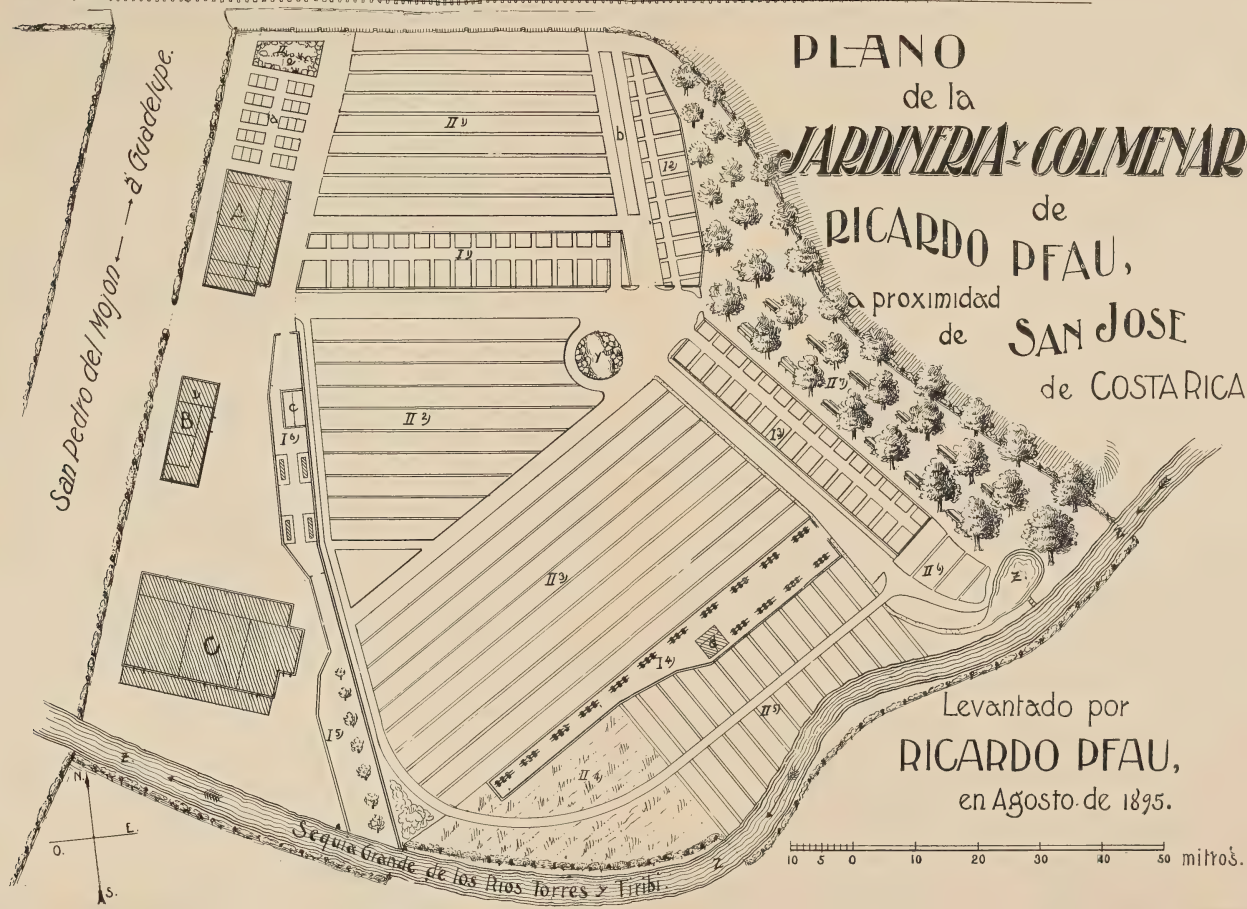
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RICARDO PFAU,
en Agosto de 1895.

10 5 0 10 20 30 40 50 mitros.

→ 103 millas
para
Puerto Limon.

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RICARDO PFAU,
en Agosto de 1895.

Levantado por
CARDO D'FAU
en Agosto de 1895.



Plan of Richard Pfau's Nursery and Apiary.

Near San Jose de Costa Rica.

Explanation of Signs.

- A. Richard Pfau's Dwellinghouse.
- B. Foreman's Dwellinghouse.
- B1. Stable.
- C. House with rooms for laborers.
- a. Sashes.
- b. Propagation-house.
- c. Poultry-house.
- d. Situation of Apiary.
- z. Large ditch supplying San Jose with water.
- y. Basin between rockery, being the center of the irrigation-ditches for the dry season.
- I 1-3 Greenhouses, special for the climate; made of wire netting all round and over, and different kinds of climbers, for orchids, palms, and shade-needing pot-plants.
- I 4. Idem, containing my apiary, Langstroth system, Dovetailed hives.
- I 5. Goats.
- I 6. Poultry.

CULTURES.

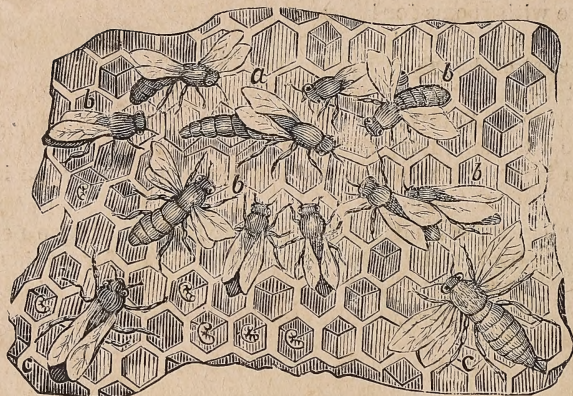
- 0. Rockery with collection of Cacti.
- 1. Collections of florists' flowers, for cutting and for propagation of stock.
- 2. Nursery of ornamental plants and trees.
- 3. Nursery of fruit-trees, both tropical and temperate.
- 4. 5. 6. Sugar-cane for work horses.
- 7. Orange-grove and recreation-grounds, with tables and benches.



Richard Pfau

Bee=Keeper. —

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